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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,567	10/08/2003	Motoyoshi Murakami	MTS-3473US	7770
23122	7590	12/21/2005	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			BERNATZ, KEVIN M	
			ART UNIT	PAPER NUMBER
			1773	
DATE MAILED: 12/21/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/681,567

Applicant(s)

MURAKAMI ET AL.

Examiner

Kevin M. Bernatz

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 25-27 and 33-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24, 28-32, 43 and 44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

1. Amendments to the specification and claims 1, 43 and 44, filed on October 11, 2005, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1 – 24, 30 – 32, 43 and 44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 33 of copending Application No. 10/497,273 (see Murakami et al., U.S. Patent App. No. 2005/0086679 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because the "reproducing layer" and "intermediate

layer” read on the claimed first and second underlayers, respectively. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Regarding the limitation(s) directed to the thickness of the layers, the Examiner notes that the disclosure of Murakami et al. ('679 A1) teach(es) that the claimed invention is an obvious variation of the disclosed invention (*Paragraphs 0030, 0032 and 0057*).

Applicants are reminded that while it is generally prohibited from using the disclosure of a potentially conflicting patent or application in an Double Patenting analysis, there are two exceptions permitted by the MPEP. Specifically, “those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent”. In the instant case since the layers must have *some* thickness, the relied upon sections are deemed to clearly provide support for what thickness values are envisioned by the disclosed and claimed invention.

5. Claims 28 and 29 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 33 of copending Application No. 10/497,273 (Murakami et al. '679 A1) as applied above, and further in view of Birukawa et al. (U.S. Patent No. 5,993,937). This is a provisional obviousness-type double patenting rejection.

App. '273 is relied upon as described above.

App. '273 fails to disclose a surface roughness meeting applicants' claimed range for the reproducing and intermediate layers (i.e. applicants' "first and second underlayers").

However, Birukawa et al. teach the importance of controlling the surface roughness of a magneto-optic recording medium to values within applicants' claimed range in order to achieve high density super resolution (*embodiment 2, Ra in the perpendicular direction of $\leq 3\text{ nm}$*). The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a results effective variable such as the surface roughness of the various layers in the magneto-optic medium through routine experimentation, especially given the teaching in Birukawa et al. regarding the desire to control the surface roughness to values meeting applicants' claimed range to achieve high density super resolution. Furthermore, the Examiner notes that one of ordinary skill in the art would appreciate that the roughness of an underlayer effects the roughness of a layer deposited thereon, hence providing motivation for controlling the roughness of all the layers in the medium structure. *In re Boesch*, 205 USPQ 215 (CCPA 1980); *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1 – 7, 10 – 21, 24, 43 and 44 are rejected under 35 U.S.C. 102(a) and/or (e) as being anticipated by Kirino et al. (U.S. Patent App. No. 2003/0134154 A1).

Regarding claim 1, Kirino et al. disclose a magneto-optical (MO) recording medium comprising a recording layer having a plurality of columns (*Paragraph 0012*); and an inorganic compound layer (i.e. applicants' "first underlayer") which is placed below said recording layer and which functions as a nucleus for said columns (*Paragraphs 0010 and 0012*), wherein the plurality of columns extends in a direction perpendicular to the layers (*Figures*).

Regarding claim 2, Kirino et al. disclose that "a change in magnetic properties occurs in the magnetic layer in the layer surface direction" with the magnetic properties different for the region closest to the first underlayer. The Examiner takes the position that the portion of the recording layer nearest the first underlayer reads on the claimed limitations since it is a distinct layer with distinct properties from the upper portion of the recording layer (i.e. applicants' "recording layer" portion).

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Regarding claims 3 and 4, Kirino et al. disclose that the layers possess magnetic material (*Co oxide, Ni oxide and Fe oxide for the first underlayer and Co for the lower portion of the recording layer*) and contain amorphous regions (*Paragraphs 0010 – 0013*), hence meeting the claimed limitations.

Regarding claims 5 and 6, since all the layers are directly adjacent, the Examiner deems that Kirino et al. meets the claimed limitations.

Regarding the limitations of claim 7, it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, since Kirino et al. explicitly teach that the behavior of the recording layer structure nearest the inorganic compound layer possesses a difference in properties, the Examiner deems that there is sufficient basis for the position that the

density on the side of the recording layer portion is also changed, especially in the view that the "second underlayer" portion would read on this portion in claim 7 (i.e. claim 7 does not require both a portion with a changed density *and* a separate second underlayer portion).

Regarding claims 10 – 13, 19, 21 and 24, Kirino et al. disclose underlayers and recording layers meeting applicants' claimed structural limitation (*Paragraphs 0011, 0032 and 0035, where the Examiner notes that the thickness of the second underlayer can be any fraction of the total thickness of the recording layer*).

Regarding claims 14 – 16 and 20, the Examiner deems that these limitations are inherently met by the structure disclosed by Kirino et al. for substantially the same reasoning as presented above with regard to claim 7.

Regarding claims 17 and 18, Kirino et al. disclose underlayers and recording layers meeting applicants' claimed limitations as described above.

Regarding claims 43 and 44, these are nominal method of recording/reproducing claims necessarily met by the disclosed structure in the Kirino et al. invention.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirino et al. as applied above, as evidenced by Bertero et al. (U.S. Patent No. 6,150,015).

Kirino et al. is relied upon as described above.

Kirino et al. fail to explicitly disclose controlling a width of a structural unit of said first underlayer to substantially 2 nm or less.

However, the Examiner deems that it would have been obvious to one having ordinary skill in the art to optimize the size of the grains (i.e. "structural units") to an amount meeting applicants' claimed size limitation by optimizing the results effective variable through routine experimentation, especially given the teaching in Bertero et al. that it is known in the art that the size of the grains effect the noise in a recording medium and that grain sizes meeting applicants' claimed limitations are desired for high areal recording density media.

10. Claims 9 and 30 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirino et al. as applied above, and further in view of Carcia (U.S. Patent No. 5,106,703).

Kirino et al. is relied upon as described above.

Kirino et al. fail to disclose the layers taking in an inert gas meeting applicants' claimed limitations. Regarding claim 9, the Examiner notes that the "first underlayer" is deemed to encompass both the inorganic compound layer and the portion of the recording layer referred to above as the "second underlayer".

However, Carcia teaches that forming layers using an inert gas as the sputter gas result in multilayers having improved magneto-optic properties (*entire reference*). While Carcia does not explicitly teach that the inert gas absorbs into the magnetic layer, the Examiner deems that there is sound basis that the sputtering of these alloys in the inert gas atmosphere will necessarily result in the incorporation of the inert gas into the layer, especially since this is a substantially identical process as disclosed by applicants. Furthermore, the Examiner notes that the exact amount of gas is a results effective variable that can be adjusted to adjust the MO properties of the medium as illustrated by Carcia. Therefore, the Examiner deems that it would have been obvious to one having ordinary skill in the art to determine an amount of inert gas meeting applicants' claimed limitations by optimizing the results effective variable through routine experimentation. *In re Boesch*, 205 USPQ 215 (CCPA 1980); *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

11. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirino et al. as applied above, and further in view of Kirino et al. (U.S. Patent No. 5,814,400).

Kirino et al. ('154 A1) is relied upon as described above, except that the first underlayer, second underlayer and recording layer are all interpreted to be part of the superlattice structure as illustrated in Figure I below.

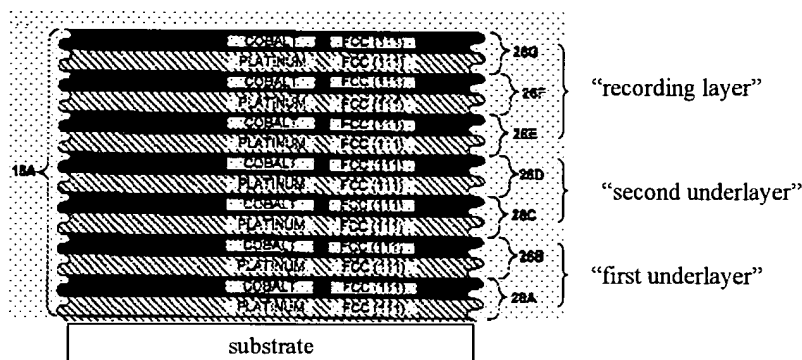


Figure 1: Illustration of the recording layer of Kirino et al.

Kirino et al. ('154 A1) fail to disclose forming the first underlayer, second underlayer and recording layer of rare earth-transition metal (RE-TM) alloys.

However, Kirino et al. ('400) teach that MO recording media can be formed by using a recording layer possessing a multilayer structure similar to that used in Kirino et al. ('154 A1) wherein RE-TM layers are alternately laminated, wherein such a layer possesses improved MO effects and improved perpendicular anisotropy (*col. 2, line 66 bridging col. 4, line 56 and examples; especially col. 4, lines 48 – 56*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kirino et al. ('154 A1) to use a structure meeting applicants' claimed limitations as taught by Kirino et al. ('400) since such a structure possesses improved MO effects and improved perpendicular anisotropy.

12. Claims 29 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirino et al. ('154 A1) as applied above, and further in view of Birukawa et al. ('937).

Kirino et al. ('154 A1) is relied upon as described above.

Kirino et al. ('154 A1) fail to disclose the surface roughness of the first and second underlayers.

However, Birukawa et al. teach the importance of controlling the surface roughness of a magneto-optic recording medium to values within applicants' claimed range in order to achieve high density super resolution (*embodiment 2, Ra in the perpendicular direction of ≤ 3 nm*). The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a results effective variable such as the surface roughness of the various layers in the magneto-optic medium through routine experimentation, especially given the teaching in Birukawa et al. regarding the desire to control the surface roughness to values meeting applicants' claimed range to achieve high density super resolution. Furthermore, the Examiner notes that one of ordinary skill in the art would appreciate that the roughness of an underlayer affects the roughness of a layer deposited thereon, hence providing motivation for controlling the roughness of all the layers in the medium structure.

Response to Arguments

13. The rejection of claims 1 – 24, 28 – 32, 43 and 44 under 35 U.S.C § 112 – 1st and 2nd Paragraph

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. "the plurality of columns extends in a direction perpendicular to the layers") overcoming the above noted rejection.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. IDS reference WO 03/046905 A1 disclose a recording layer structure that "has a columnar structure oriented substantially in the vertical direction" (*Abstract*), though it appears to be referring to the lands and groove structure of the medium (*Figures*). JP 06-020313 A teach a MO recording medium possessing three magnetic layers wherein at least the middle magnetic layer has a "columnar structure" (*JPO Abstract Translation*).

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

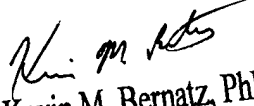
Applicants' amendment resulted in embodiments not previously considered (i.e. "the plurality of columns extends in a direction perpendicular to the layers") which necessitated the new grounds of rejection, and hence the finality of this action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
December 16, 2005


Kevin M. Bernatz, PhD
Primary Examiner